

## Just Passing Through

Cell membranes are semipermeable, meaning that only certain substances, based on the molecule's size and electric charge, can pass through. Molecules passively move from areas of high concentration to areas of low concentration. Starch, which is a large molecule that cannot pass through most membranes, can be identified with indicator solutions, such as Lugol Solution—an amber-colored indicator solution that turns black in the presence of starch. In this activity, you will observe diffusion of iodine molecules through a semipermeable membrane that allows for passage of molecules up to 180kDa.

- NGSS Scientific and Engineering Practice: Constructing Explanations
- NGSS Core Idea: From Molecules to Organisms: Structures and Processes

### Materials Required

1% Cornstarch Solution	Lugol Solution (872793)	Water
Carolina® Osmosis Chamber (684270)	Beaker	Vis-à-Vis Marker
Micro-tip Pipets (736982)		

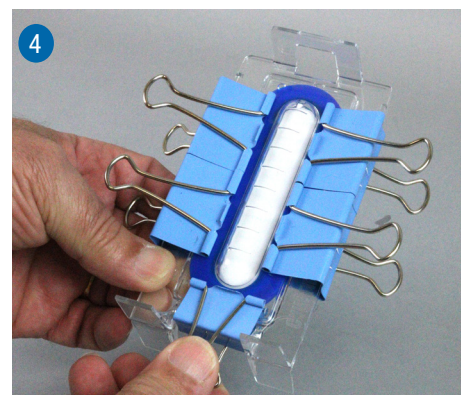
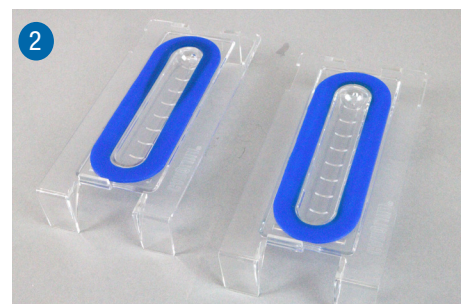
### Safety

Lugol Solution will stain skin and clothing. Use appropriate PPE, such as gloves and aprons.

### Activity Procedure

1. Using a clean pipet, place 1 drop of water at the top of each half of the Carolina® Osmosis Chamber. Spread the water around the surface of the chambers with your finger.
2. Place the blue silicone rings around the wells, sealing them with the water.
3. Place the presoaked membrane on one side of the chamber in the center of the well.
4. Put both halves of the chamber together, securing with provided clips.
5. Using a micro-tip pipet, add 4 mL of starch solution to one side of the chamber. Label that side "Starch" with the marker.
6. Using a clean micro-tip pipet, add 4 mL of Lugol Solution to the empty side of the chamber. Label that side "Lugol" with the marker.
7. Observe any changes, and record them in the table below.

Time (in minutes)	Starch	Lugol
0		
1		
2		
3		
4		



### Results/Summary

Iodine molecules in the Lugol Solution are small enough to pass through the membrane. Starch molecules are too large to pass through the membrane. Because the concentration of molecules is higher on the Lugol side of the chamber and the iodine molecules are small enough to pass through, they diffused through the membrane and turned the starch molecules black.

### Additional Information

View more information, content links, and products related to this activity at [www.carolina.com/takeaways](http://www.carolina.com/takeaways).

